Provide funding and technical support to parks with significant natural resources

LONG-TERM GOAL: Implement ecological monitoring in all units of the NPS.

SHORT-TERM GOALS (as of 1992):

1. Complete baseline resource inventories.
2. Learn how to design and conduct monitoring programs.

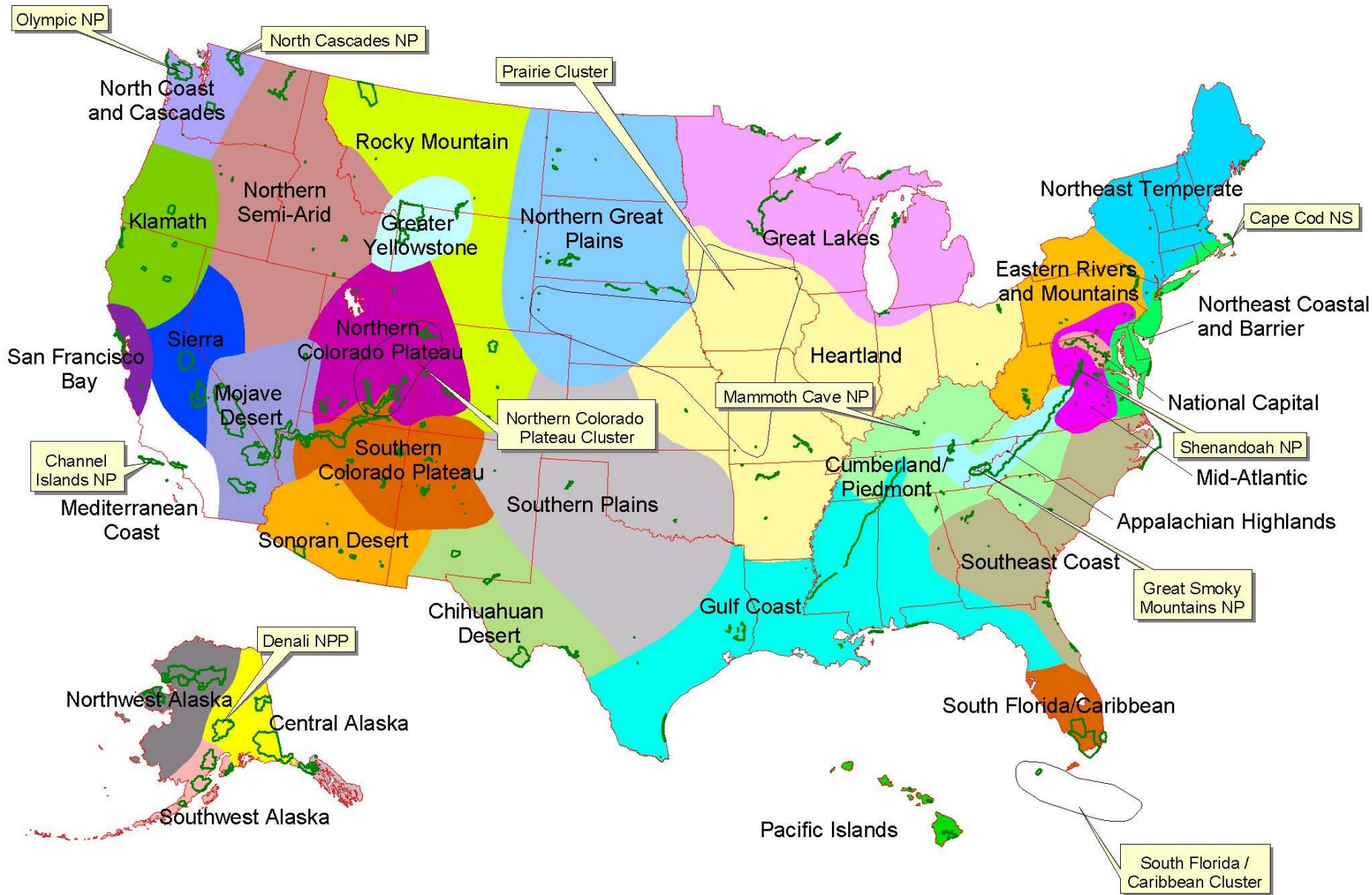# Exotic/Invasive Plant Inventory and Monitoring

- Inventories:
    - Searching areas for presence/absence of exotic/ invasive plants
    - Mapping current distributions of exotic plants
    - Vegetation mapping; community distributions
- Long-term Monitoring
    - Early warning of new occurrences or spread
    - Effect of control programs on target species
    - Effect of control programs on recovery of natural systems
    - Progress towards meeting performance goals for exotic plant management

12 Basic Inventory Datasets

- **Natural resource bibliography**
- **Base cartographic data**
- **Geology map**
- **Soils map**
- **Weather data**
- **Air quality**
- **Location of air quality monitoring stations**
- **Water body location and classification**
- **Water quality data**
- **Vegetation map**
- **Species list of vertebrates and vascular plants**
- **Species distribution and status of vertebrates and vascular plants of high priority to each park**

Olympic NP

North Cascades NP

North Coast
and Cascades

Prairie Cluster

Rocky Mountain

Northern
Semi-Arid

Klamath

Greater
Yellowstone

Northern Great
Plains

Great Lakes

Northeast Temperate

Cape Cod NS

Eastern Rivers
and Mountains

Sierra

Northern
Colorado Plateau

San Francisco
Bay

Heartland

Northeast Coastal
and Barrier

Mojave
Desert

National Capital

Channel
Islands NP

Northern Colorado
Plateau Cluster

Mammoth Cave NP

Shenandoah NP

Mediterranean
Coast

Southern
Colorado Plateau

Cumberland/
Piedmont

Mid-Atlantic

Southern Plains

Appalachian Highlands

Sonoran Desert

Southeast Coast

Great Smoky
Mountains NP

Chihuahuan
Desert

Gulf Coast

Denali NPP

Northwest Alaska

Central Alaska

South Florida/Caribbean

Southwest Alaska

Pacific Islands

South Florida /
Caribbean Cluster

5 Goals of Vital Signs Monitoring

1. Determine status and trends in selected indicators of the condition of park ecosystems to allow managers to make better-informed decisions and to work more effectively with other agencies and individuals for the benefit of park resources.

2. Provide early warning of abnormal conditions of selected resources to help develop effective mitigation measures and reduce costs of management.

5 Goals of Vital Signs Monitoring

3. Provide data to better understand the dynamic nature and condition of park ecosystems and to provide reference points for comparisons with other, altered environments.

4. Provide data to meet certain legal and Congressional mandates related to natural resource protection and visitor enjoyment.

5. Provide a means of measuring progress towards performance goals.

Key Features of New Park/Network Monitoring Program

(moving away from the stovepipe model)

- Integrated monitoring program: physical and biological resources including weather, air, water, geoindicators, T&E species, exotic plants, other flora & fauna

- Integrate NR information with other park operations including interpretation, maintenance, law enforcement

- Emphasis on making information more useable; tools such as GIS Theme Manager, NR Database template, NPSpecies, Dataset Catalog, NR Bibliography, interconnected web and distributed databases

Key Features of New Park/Network Monitoring Program

- Each network receives approx. 5-9 new positions and funding to develop a core program to monitor key components and trends.

- New positions and funding are shared by parks and augmented by existing personnel and funds

- Based on each park's priorities and needs; flexible

- Data are collected primarily to provide local managers with the data needed to manage the park and work with their neighbors/partners.

Partnerships; Data Comparability

"The monitoring program shall be developed in cooperation with other federal monitoring and information collection efforts to ensure a cost-effective approach."

(National Parks Omnibus Management Act of 1988)

Tasks that Need to Be Completed Before Monitoring Field Work Begins:

- Clearly define **Goals and Objectives**
- Develop **Monitoring Protocols**
- Design **Field Data Forms**
- Design **Database**
- Write **Data Management Plan**
- Determine **Data Analysis Procedures**
- Determine **Content, Audiences for Reports**

3-Phase Monitoring Design

- Phase 1: Background work prior to selecting vital signs
  - goals and objectives for monitoring
  - identify, evaluate, synthesize existing data and understanding (identify and catalog existing data sets)
  - draft conceptual models

- Phase 2: Initial selection and prioritization of vital signs
  - update and expand upon Phase I work; select vital signs

- Phase 3: Development of full monitoring plan
  - Detailed design work; protocols, spatial sampling design
  - Design database
  - Write Data Management Plan

Timeline for Monitoring Design
(core vital signs and water quality monitoring)

First 12 networks:

    Phase 1:   October 1, 2002

    Phase 2:   April 1, 2003

    Phase 3:   April 1, 2004

Next 5 networks (startup funds in FY 02):

    Phase 1:   April 1, 2003   (1 1/2 years)

    Phase 2:   October 1, 2003   (2 years)

    Phase 3:   October 1, 2004   (3 years)

Monitoring Protocols

- Key component of Quality Assurance to ensure that data meet defined standards of quality with a stated level of confidence

Quality Assurance:

"The policy, procedures, and systematic actions established for the purpose of providing and maintaining a specified degree of confidence in data integrity and accuracy throughout the lifecycle of the data, which includes input, update, manipulation, and output."

Why do we need Monitoring Protocols?

- Necessary for the program to be credible, so that data stand up to external review

- Necessary to detect changes over time and for the program to survive changeovers in personnel

- Necessary to allow comparisons of data among places/agencies

Designing a Monitoring Program requires a large up-front investment that should be represented in the protocol document

- Clear statement of questions being asked, including Measurable Objectives

- Sampling framework/design

- Step-by-step procedures for collecting, managing and analyzing the resulting data

- Expectations/examples for presenting the data in graphs, tables, reports

- Personnel requirements and training

- Operation requirements: scheduling, equipment needs, startup costs and budget requirements

Web-based Clearinghouse of Protocols and Database Components

Amphibian Call Counts	Protocol	Database*	Data Analysis
Bird VCP counts	Protocol	Database	Data Analysis
Breeding Bird Survey	Protocol	Database	Data Analysis
Coral reef video sampling	Protocol	Database	Data Analysis
Rare plants	Protocol	Database	Data Analysis
Rare plants	Protocol	Database	Data Analysis
Weather	Protocol	Database	Data Analysis
Weather	Protocol	Database	Data Analysis
Weather	Protocol	Database	Data Analysis

* Database is an MS Access .mdb file with tables, queries, forms, reports designed for a particular protocol.

U.S. Department of the Interior
National Park Service

Bird Monitoring Protocol for Agate Fossil Beds National Monument, Nebraska and Tallgrass Prairie National Preserve, Kansas

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For the:

Prairie Cluster Long-Term Ecological Monitoring Program,
National Park Service, U.S. Department of the Interior

Table of Contents:

Important Note: This sampling protocol consists of this Protocol Narrative and the following Standard Operating Procedures (SOPs):

SOP 1:   Before the Field Season
SOP 2:   Field Season Schedule
SOP 3:   Training Observers
SOP 4:   Establishing and Marking Sampling Plots
SOP 5:   Conducting the Variable Circular Plot Count
SOP 6:   Documenting Habitat Variables
SOP 7:   Data Management
SOP 8:   Data Analysis
SOP 9:   Reporting
SOP 10:   After the Field Season
SOP 11:   Procedures for Changing the Procedures

Bird Monitoring Protocol for Agate Fossil Beds National Monument, Nebraska and Tallgrass Prairie National Preserve, Kansas

Standard Operating Procedure (SOP) # 5

Conducting the Count

Version 0.1 (December 20, 2001)

This SOP gives step-by-step instructions for conducting 5-minute bird counts at Agate Fossil Beds NM and Tallgrass Prairie NPres using the Variable Circular Plot (VCP) methodology. The SOP describes the procedure for collecting data and filling in the data form "Field Data Form – Variable Circular Plot Counts" (Form 1).

Revision History Log:

Prev. Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #

Example for filling in the field data form:

Field Data Form – Variable Circular Plot Counts

LocationID: _TAPRTweety103_____ **or** Park: AGFO TAPR   **and** Location Description: _____

Date (mm/dd/yyyy): _05/23/2001_____   Start Time (hhmm): __0916__   Observer Initials: _DGP__

Conditions: Temperature (C): _8.0_   Wind (0-6): __1___   Rain (0-5): __0___   Clouds (0-100): 30 N

Time Interval	Observ. #	Species	Distance (m)	DT	Sex	Age	Flock Size	Prev. Plot	# Fly Over	Comments
0-3	1	WEME	35	4	M	A	1			
0-3	2	BHCO	56	4	M	A	1			
0-3	3	HOLA	30	4	M	A	1			
0-3	4	CLSW							1	
3-5	5	GRSP	22	2	M	A	1			